

APPENDIX E:
RÉSUMÉS OF HAZOP STUDY TEAM

Area of Responsibility

Industrial Hygiene, Chemical Safety

Experience

15 years

- Performed surveys on a nationwide basis in manufacturing, petrochemical facilities, and offices to improve indoor air quality. Evaluated exposures to asbestos and fibrous glass fibers, wood dust, **respirable** silica, welding fumes, metals, and other airborne particulate. Monitored personal exposures to solvent vapors, sewer gases, plastic monomers and resins, carbon monoxide, and other gases and vapors.
- Conducted heat stress monitoring and surveying for **ionizing** and **non-ionizing** radiation hazards.
- Developed asbestos training programs for more than 1,000 workers. **Directed** bio-environmental engineering program for **Air National** Guard Base.
- Reviewed facilities engineering plans pertaining to industrial hygiene. Recommended corrections and/or designed ventilation systems at manufacturing facilities.

Education

B. S., Environmental Science, University of Michigan

Other

Certified Industrial Hygienist
Certified Hazardous Waste Worker

Area of Responsibility

Hazard Analysis Process Operator, Process Safety and Risk Management

Experience

16 years

- Plant supervisor responsible for the operation of steam, water, process air, and sanitary sewer utilities of the Hanford 300-Area. Responsibilities include maintenance and operation of chlorination process equipment and the chlorine cylinder storage area. Assisted in development of the chlorine cylinder storage and handling facilities, chlorination process equipment, and operating procedures.
- Plant operator of steam, water, process air, and sanitary sewer utilities in the Hanford 300-Area. As plant operator, controlled chlorination system, including processing and chlorination of potable water, and sampling and testing of water in accordance with State of Washington code.

Education

U.S. Navy Basic Propulsion and Engineering School
U.S. Navy Boiler Technician "A" School

Other

State of Washington Group **II** Water Treatment Operator

Area of Responsibility

Hazard and Risk Analysis

Experience

22 years

- Experience in occupational safety, industrial hygiene, human factors, fire safety, and **safety** management.
- Consulted with numerous organizations on safety issues and processes. Assisted in program review and development and accident analysis. Performed safety process reviews and audits to determine general and chemical process hazards.
- Managed consultants and developed service programs to reduce accident frequency for the firms serviced. Managed training, industrial hygiene, and general safety programs for **these** consulting programs. other responsibilities included training, safety literature development, and performance management.
- . Developed preliminary hazard analyses **for** new and existing U.S. Department of Energy research facilities.

Education

B. S., Physics, Oregon State University
M. S., Industrial Engineering, Oregon State University

Other

Certified Safety Professional

Area of Responsibility

Process Safety Management

Experience

10 years

- U.S. Department of Energy, Occupational Safety and Health Manager. Responsible for development of technical guidance documents in occupational safety.
- DOE Program Manager. Responsible **for** development of tools **for** DOE-wide implementation of the Occupational Safety and Health Administration rule, 29 **CFR** 1910.119, "Process Safety Management of Highly Hazardous Chemicals. "
- **OSHA**, General Industry Compliance Assistance. As a safety engineer, responsible for development of the Special Emphasis Program, **PETROSEP**, which directed compliance personnel in conducting inspections at petrochemical facilities. Provided interpretation of OSHA standards and developed directives interpreting performance-based OSHA standards, Conducted chemical **plant** inspections assessing chemical process safety. Conducted workplace accident investigations involving chemical releases and explosions.
- West Virginia Department of Natural Resources, Division of Hazardous Waste Management. As a chemical engineer, reviewed Part B applications **for** Resource Conservation and Recovery Act facilities. Participated in the development of state hazardous waste management regulations.

Education

B. S., Chemical Engineering, **Osmania** University, **Hyderabad**, India
M. S., Chemical Engineering, **Ohio State University**

Area of Responsibility

Process Hazard Analysis Leader, Process Safety and Risk Management

Experience

20 years

- Hazard and operability (**HAZOP**) study leader **for** numerous facilities, including manufacturers of **sulfuric acid, oleum,** and liquid SO_3 ; a hydrocarbon recovery system; startup and operating procedures **for** three refineries; a state-of-the-art hazardous waste disposal **facility,** for which accident scenarios were assessed **for** frequency and consequences; a batch-process catalyst manufacturing plant survey and upgrade; and an advanced absorption heat transfer system.
- Led a preliminary hazard analysis for the **design** of a hazardous waste processing plant. PHA addressed the locations of hazards and their relative risks. Planned and led a risk audit of a chemical process plant that used large quantities of hydrogen sulfide. The audit covered process components, operation, and maintenance, and onsite transportation. Led a risk assessment of a chemical pilot **plant** where temperature **control** was critical. Used **fault trees** to model system **failures** that **could** cause loss of temperature control.
- Author of numerous publications on hazard evaluation and **HAZOP** study procedures.
- Presented numerous seminars and workshops on risk assessment. Currently leads the American Institute of Chemical Engineers Center **for** Chemical Process Safety continuing education course, "Use of Hazard and Operability Studies in Process Risk Management." This course has been presented to more than 1,200 engineers and 20 different companies.

Education

B. S., Electrical Engineering, University of **Cincinnati**

M. S., Engineering, University of Santa Clara

Area of Responsibility

Mechanical Engineering, Risk Assessment, Human Factors

Experience

30 years

- U.S. Department of Energy, Risk Assessment Team Manager. As Safety Analysis Division Director, **performed** oversight of DOE safety analyses, development of safety and risk policies, and review of reactor and non-reactor probabilistic risk assessments.
- Nuclear Regulatory Commission, Region 1, Technical Assistant. Provided technical support to regional management concerning inspection activities and risk-based applications. Inspection team leader on major probabilistic risk assessment-based **inspections**. Program manager of **Calvert Cliff's** and **LaSalle PRAs**.
- Design and safety specialist in space electric and nuclear applications at **Hittman Associates, Inc.**
- U.S. Atomic Energy Commission. Program manager for space electric component development, reactor core and shielding design, and major nuclear project construction.

Education

B. S., Nuclear Engineering, New York State Maritime College
M. B.A., Engineering Management, George Washington University

Other

Certification, Oak Ridge School of Reactor Technology

Area of Responsibility

Chemical Engineering, Hazard and Risk Analysis

Experience

20 years

- Group Leader, Risk and Safety Analysis.
- Project manager for the **Liquefied** Gaseous Fuels Release Prevention and Control Project.
- Project manager, task manager, and technical contributor to numerous risk and safety analyses of energy-related systems, including nuclear reactors and **fuel** cycle facilities, nuclear waste **facilities**, chemical waste facilities, and chemical facilities.
- Preparation of safety analysis reports for U.S. Department of Energy **nuclear** and chemical facilities at the **Hanford** Site.

Education

M. S., Chemical Engineering, University of Washington
B. S., Chemical Engineering, Carnegie Mellon University

Other

Registered Professional Engineer, Washington

Area of Responsibility

Industrial Hygiene, Hazard and Risk Analysis

Experience

22 years

- **Performed** risk and **safety** analyses for chemical operations in various U.S. Department of Energy facilities at the Hanford Site. Responsible for safety documentation of the new Pacific Northwest Laboratory Environmental and Molecular Sciences Laboratory.
- Developed an occupational health and safety program for the International Atomic Energy Agency Department of Safeguards.
- Senior Industrial Hygienist for PNL with a staff of 3,000.
- Regional Safety Manager **for** the U.S. Fish and Wildlife Service supporting managers of fish hatcheries and wildlife refuges in a six state region.
- System safety engineer at Headquarters, U.S. Army Test and Evaluation Command, and at two proving grounds. Supported safety test design and evaluation. Responsible for the resolution of technical occupational safety and health issues at the proving grounds.

Education

M. E., Industrial Engineering (System Safety), Texas A&M University, 1974
B. S., Industrial Engineering, University of Washington, 1971
B. S., Mechanical Engineering, University of Washington, 1971

Other

Certified Safety Professional
Certified Industrial Hygienist
Professional Engineer in Safety Engineering in the State of California

Area of Responsibility

Hazard Analysis, Process Engineer

Experience

23 years

- Plant Engineer in the 300-Area Utilities and **Effluent** Treatment Plant, leading efforts in domestic and process sewer upgrades, installation of **filter** backwash pond and outfall, construction of filter plant chlorine storage facility, installation of new chlorinators and of treated **effluent** disposal system, replacement of ash sluice pond, and **installation** of metering manhole for the process sewer.
- Waste Water Plant Superintendent **for** Industrial and Domestic Treatment Plant of the City of Presser, Washington, including maintenance and operation of spray field and sewer system. Designed reviews of new filtration plant and waste water plant upgrade.
- Chief operator for the water treatment plant for the City of **Yakima**, Washington, including supervision of **influent**, grit, and rag removal; primary clarification centrifuge; primary and secondary digesters; trickling filters; activated sludge final clarification; chlorination; and spray field **for** industrial wastes.
- Operator and maintenance employee **for** the watershed of the City of The **Dalles**, Oregon, Waste Water Treatment Plant and Filter Plant. Participated in waste water plant construction, startup, and operation.

Education

Domestic and industrial waste water treatment training, Lim Benton Community College
Work-related **classes** at Columbia Basin College

Other

State of Washington Group IV Waste Water Treatment Process Operator
State of Washington Group II Waste Water Treatment Process Operator